TVC 1100/1200 Hardware Setup Manual
User's Manual

013-100380-03

China RoHS Compliance Information
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- Environmentally Friendly Use Period
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- Material Concentration Values Table
  有毒有害物质含量表

Part Name	部件名称	Material Concentration (有毒有害物质或元素)					
		铅（Pb）	汞（Hg）	镉（Cd）	六价铬 (Cr 6+)	多溴联苯（PBB）	多溴二联苯醚（PBDE）
Power supply	电源	X	O	O	O	O	X
Harness/cable	连接电线/缆	X	O	O	O	O	X
Fan	风扇	O	O	O	O	O	O
CPU	中央处理器	X	O	O	O	O	O
Hard drive	硬盘	X	O	O	O	O	O
RAM & ROM	存储器	X	O	O	O	O	O
Video input PCB	图像输入卡	X	O	O	O	O	O
Host interface card	主机接口卡	X	O	O	O	O	O
PCI expansion card	PCI 扩展卡	X	O	O	O	O	O
PCI backplane	PCI 底板	X	O	O	O	O	O
System board PCB	主板	X	O	O	O	O	O
SCSI RAID disk array controller	磁盘阵列控制器	X	O	O	O	O	O
Video overlay card	视频叠加卡	X	O	O	O	O	O
Display card	显卡	X	O	O	O	O	O
Sound card	声卡	X	O	O	O	O	O
Network adapter	网络适配卡	X	O	O	O	O	O
Mechanical enclosure*	机械附件	X	O	O	O	O	O
Keyboard	键盘	O	O	O	O	O	O
Mouse	鼠标	O	O	O	O	O	O
Windows CD	视窗软件光盘	X	X	X	X	X	X
Battery	电池	O	O	O	O	O	O

Note:
O : indicates that the concentration value of the particular hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C, is below the stipulated levels in China SJ/T11363-2006.
表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006规定的限量要求以下。
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表示该有毒有害物质至少在该部件的某一均质材料中的含量可能超出SJ/T11363-2006规定的限量要求。

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Section 1

Preface

1.1 In this Document

This manual includes information regarding the setup and connection of the TVC chassis and Expansion chassis. It also contains important specifications for both the TVC-1100 and the TVC-1200.

1.2 Safety Information

Review all safety information before attempting to service the TVC controller.

Preventing Electrostatic Discharge

Electrostatic Discharge (ESD) can damage electronic components like the system board, CPU, and display modules. ESD damage can shorten a component's life expectancy or render it useless.

The following precautions can reduce the risk of ESD damage to components:

- Ground yourself properly when working with a static-sensitive component or assembly.
- If possible, work on a grounded surface like a mat.
- Keep electrostatic-sensitive components in their static-safe packaging until you are ready to install.
- Always avoid touching pins, leads, or circuitry.

Installation Guidelines

Installation in a rack assembly is recommended for this product. Carefully read the following guidelines to ensure the TVC can maintain optimum operation:

Elevated Ambient Temperature

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature of 35°C.

Reduced Air Flow

Maintain unrestricted airflow around the installed equipment at all times.

Mechanical Loading

Mounting of the equipment in a rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Circuit Overloading

Ensure that the equipment is properly connected to the supply circuit to avoid overloading the circuits. Follow the equipment ratings when addressing this concern.

Reliable Grounding

Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections rather than direct connections to the branch circuit (e.g. use of power strips).

Grounding the Expansion Chassis

You MUST connect the expansion chassis to a reliable earth ground and install it in accordance with local electrical safety standards.

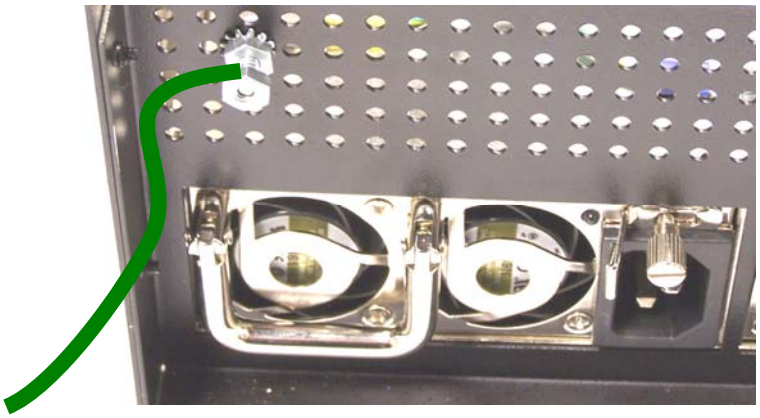

Figure 1-1 Grounding the Expansion Chassis

Symbols and Labels for the TVC Controller and Expansion Chassis

Observe and follow all warnings and instructions marked on the chassis, the components in the controller, and in the service guide. The following symbols indicate potential hazards:

	This symbol indicates the presence of hazardous energy circuits or electrical shock hazards. WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure. Refer all maintenance, upgrades and servicing to qualified personnel.
	This symbol indicates that the area contains no user or field serviceable parts and electrical shock hazards may be present. WARNING: To reduce the risk of injury from electrical shock hazards, do not open this enclosure.
	This symbol on an RJ-45 receptacle indicates a network interface connection. WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

	This symbol indicates the presence of a hot surface or hot component. Contact with the hot surface may cause personal injury. WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.
 25-41 kg 55-90 lbs	This symbol indicates that the component exceeds the recommended weight that on person may handle safely. WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.
	These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple power sources. WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

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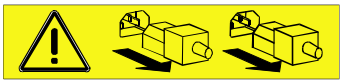
The following labels indicate potential hazards:

	The power supplies combined exceed the 3.5mA touch current limit. WARNING: The expansion chassis must be grounded using the grounding terminal.
	This symbol indicates the presence of hazardous energy circuits or electric shock hazards. WARNING: To reduce the risk of injury from electric shock hazards, remove all power cords to completely disconnect power from the system. Refer all maintenance, upgrades, and servicing to qualified personnel.
	These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple power sources. WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.
	This symbol indicates that you MUST connect the expansion chassis to a reliable earth ground. The ground wire must be installed in accordance with local electrical safety standards.

1.3 Document Conventions

1. Fields, buttons, panel names, and other elements that you need to interact with on the screen are formatted *like this* in stepped procedures. For example, in the *MediaManager* window, click *Profile>Create Shortcut…*
2. Screen elements in introductory paragraphs, descriptive text and notes are formatted the same as the surrounding text.
3. Text that must be entered as specified in the guide is **bold**. For example, in the Run dialog, type **D:\autorun\autorun.exe**.
4. **Bold** is also used for company contact information. For example, you can register your product on-line by visiting **www.christiedigital.com**.

5. An arrow “>” indicates movement through menu options. For example, *File > Save* indicates select *Save* from the *File* menu.
6. Operational states are CAPITALIZED. For example, turn device ON.
7. Listed items, where order is of no significance, are preceded by bullets.
8. Numbered items are to be performed in the order in which they appear.

1.4 Related Documents

For information about using the MASTER*Suite* software, please refer to the *MASTERSuite User Manual*.

Section 2

Hardware

2.1 About the Total View Controller

The Total View Controller (TVC) is a computer device that allows a user to control a display wall. Through specially designed wall management software, the user can control and display several applications simultaneously on a large, ultra-high resolution desktop. Each controller is pre-configured according to each customer's specifications.

Key Features and Capabilities:

- Rugged, industrial 19" rack mount form factor with front panel status LEDs
- 5U main chassis with 4 PCI-X and 2 PCI Express expansion slots
- Multiple 6U expansion chassis, each with 13 PCI expansion slots
- Hot-plug power supplies
- Hot-plug main chassis cooling fans
- Up to two dual-core Intel Xeon processors
- Up to 4GB of DDR2 SDRAM
- Up to 1.8TB of Ultra320 SCSI hot plug hard drive storage
- Optional RAID controller card
- Up to 11 Gigabit Ethernet ports
- Three USB 2.0 ports
- One parallel port
- Two serial ports
- One keyboard
- One two-button optical mouse with scroll wheel
- DVD +RW 16x drive
- 1.44MB floppy drive
- Up to 64 display outputs
- Up to 16 simultaneous video windows per display output
- Up to 16 RGB windows
- System hardware and software monitoring of the main chassis
- Windows Server 2003 SE
- MASTER*Suite* 4.1
- >50 000 hours of mean-time-between-failure (MTBF) for all major hardware components
- <15 minutes mean-time-to-recovery (MTTR) for all major hardware components

Base Configuration

The controller is packaged and shipped in a pre-configured manner. The base configuration includes the 5U main chassis with the following:

- Three available PCI-X expansion slots
- Two available PCI Express expansion slots
- Intel® Xeon™ 3.00GHz/800MHz with 2MB L2 cache
- 1GB of PC2-3200R 400MHz DDR2 memory with Advanced ECC capabilities
- 36.4GB Ultra320 SCSI 15K RPM hot plug hard drive
- Embedded PCI-X Gigabit network port
- Four-channel graphics module with advanced video support
- Single hot plug power supply
- 3x hot plug chassis cooling fans
- Keyboard
- Two-button optical mouse with scroll wheel
- DVD +RW 16X drive
- 1.44MB floppy drive
- Windows Server 2003 SE
- MASTER*Suite*

2.2 Unpacking the TVC

Please ensure that you have received all standard components.

***NOTE**: Components that are optional are marked with an asterisk.*

TVC Chassis

Main Box:

- Controller
- Accessories Box 1:
  - Sliding rail rack mounting kit
- Accessories Box 2:
  - Product Registration Card
  - Start-up Instruction Sheet (Windows Server only)
  - Operating System CD (Windows Server)
  - MASTER*Suite* Software CD
  - MASTER*Suite* User Manual (PN: 013-100267-01)
  - Keyboard
  - Mouse
  - One AC Line Cord per Power Supply
  - Dual VGA splitter cables (two per *D4/D4A* module)
  - HP SmartStart CD (required for Windows reinstall)
  - 2x controller Front Panel Keys

- **V4* Input Module (TVC-1100 only: one per *D4* module, the first is installed in the controller)
- *BNC breakout cables (one required per *VS16* module, two required per *V9/V16A* module)
- *Dual DVI-D splitter cables (two per *D4/D4A* module)

Figure 2-1 The Controller

Expansion Chassis

- Expansion Chassis
- Accessories Box
  - Sliding rail rack mounting kit
  - One AC Line Cord per Power Supply (four per chassis)
  - Dual VGA splitter cables (two per *D4/D4A* module)
  - Misc. hardware (screws, etc.)

Figure 2-2 The Expansion Chassis

2.3 Purchase Record and Servicing

If you encounter any problems with the controller and require assistance, contact *Christie* Technical Support by sending e-mail to *controllers@christiedigital.com*. In North America, call toll free 1-800-221-8025.

Updated contact information can be found at **http://www.christiedigital.com/** under “Contact Christie”.

Fill out the information in the table below and keep with your records for future reference.

Purchase Record

TVC Serial Number:
Expansion Chassis Serial Number:
Purchase Date:

NOTE: *The serial number can be found on the license label.*

You can also register your product on-line by visiting **www.christiedigital.com > Product Resources & Support > Product Registration**. This will keep you up-to-date with all the latest product information, such as updates, technical bulletins, downloads and newsletters.

Section 3

Connecting the Controller

This section discusses how to prepare your controller for operation. It provides a detailed look at the controller chassis and its various components, instructions on how to connect various sources and how to power the controller ON or OFF.

- Grounding the Expansion Chassis
- Channel and Display Numbering
- Connecting the Expansion Chassis to the Controller
- Connecting Devices for TVC-1200
- Connecting Devices for TVC-1100
- Connecting Peripheral Devices
- Connecting Power
- Powering ON/OFF
- System Monitoring

***NOTE**: Connection instructions are different for the TVC-1100 and TVC-1200 cards. Ensure that you are referring to the appropriate section for your specific hardware.*

3.1 Grounding the Expansion Chassis

The Expansion chassis must be connected to a reliable earth ground. The ground wire must be installed in accordance with local electrical safety standards. Refer to Figure 1-1.

3.2 Channel and Display Numbering

Channel numbering refers to the position of the input cards in the TVC base and Expansion chassis.

TVC-1200

The following diagrams illustrate how the cards installed in the TVC-1200 and the Expansion chassis translate to channels in MASTER*Suite*.

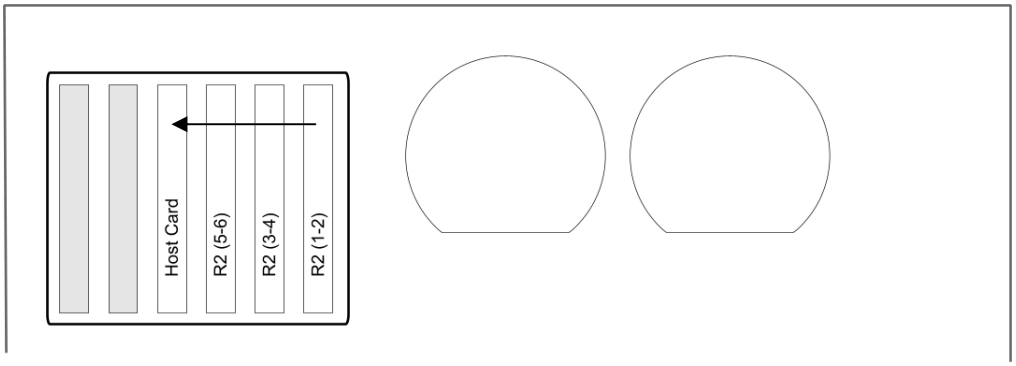


Figure 3-1 TVC Base Chassis Channel Numbering (rear view)

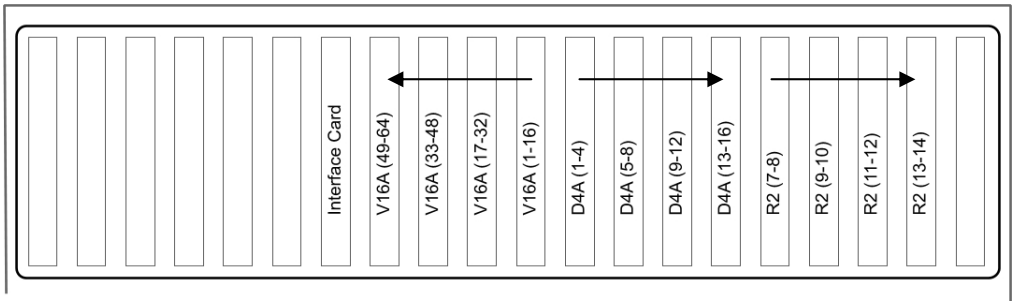


Figure 3-2 TVC Expansion Chassis Channel Numbering (rear view)

TVC-1100

Channels for TVC-1100 cards are always numbered from left to right when viewed from the back.

3.3 Connecting the Expansion Chassis to the Controller

Connect the Expansion Host card (controller) to the Expansion Interface card (expansion chassis) with the specialized cable provided. The connectors and cable are keyed. Connect the cable to the right-hand connector (labeled 32) on each card.

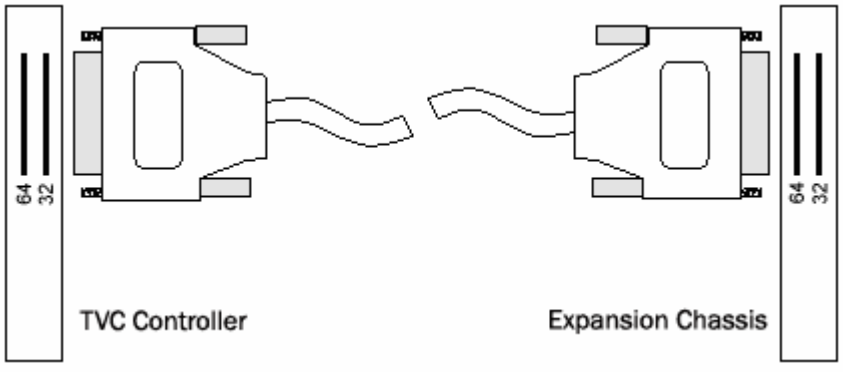


Figure 3-3 Connecting the TVC and the Expansion Chassis

3.4 Connecting Devices for TVC-1200

Input and display modules can be installed in the TVC base chassis, the expansion chassis, or both.

About Source Connections

The controller comes pre-configured according to your specifications. You should be able to connect your sources and display content on the display wall when the unit is unpacked.

This section provides a high-level overview of the capabilities of the modules that are available for this controller. It also touches on some system configuration information.

All Input and Display Modules are clearly labeled.

IMPORTANT! If you are installing new component(s) into your existing controller, read the service sheet(s) that came with the new module(s) carefully before beginning. The information provided in this chapter is not sufficient for proper installation and module configuration for the TVC-1200 series controller.

Composite or S-Video Sources

You can connect composite and S-video sources to V16A modules.

V16A Module

The V16A module (16-input) is installed into the controller to allow connection of S-video, composite sources or both. A single V16A module has 16 built-in decoders. Each decoder has two inputs, which are the corresponding inputs from the top connector (A) and the bottom connector (B). To hook up composite video, connect “A” inputs. To hook up S-video, connect Y (Luma) to the “A” input and C (Chroma) to the corresponding “B” input.

A single V16A module can connect up to 32 composite or 16 S-video signal sources simultaneously. Up to 16 composite or S-video video overlays can be displayed anywhere on one or more displays in a display wall.

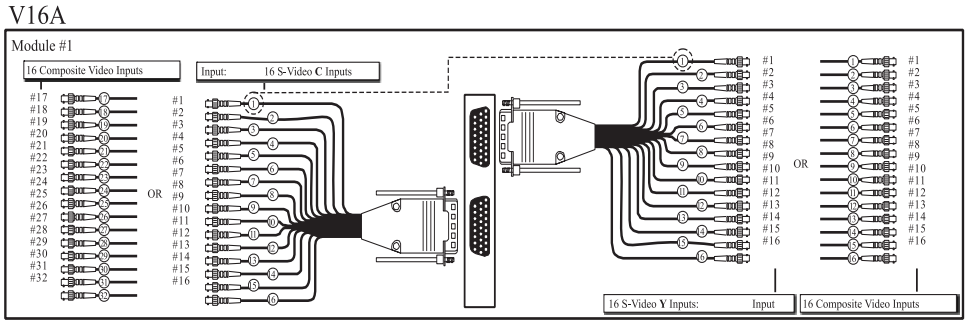


Figure 3-4 V16A Connections

NOTES: 1) *A total of eight V16A modules can be installed in a controller. You can connect four V16A modules to a single D4A module.* ***2)*** *To view multiple videos on any given display, the video sources must be connected to a single V16A module. Only one V16A module can drive a display at any given time.*

R2 Module

The *R2* module is not part of the standard controller configuration. You can install up to a maximum of eight *R2* modules in one TVC. For RGB channel configuration, refer to Figure 3-1 and Figure 3-2.

Each *R2* has two connectors. An RGB source connected to the top connector is considered Input 1.

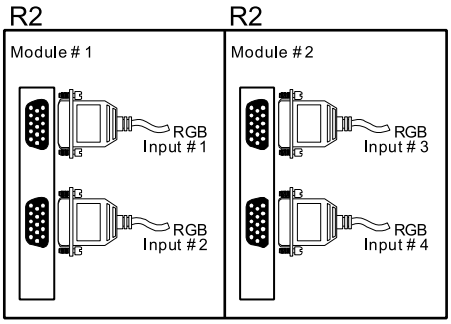


Figure 3-5 R2 Connections

Connecting Display Devices/Screens

The controller comes standard with one *D4A or D4* display module and two dual VGA cables (or DVI cables). In this configuration, the controller can be connected to up to four display devices. The controller can be customized to include up to 16 D4A (using multiple expansion chassis) or 10 D4 (using a single expansion chassis) modules, enabling you to choose from a variety of configurations.

VGA Cables

When connecting display devices to the controller, do the following:

1. Connect the single end of each of the two dual VGA cables to the display module connectors on the rear panel. See Figure 3-6.
2. Connect the other two ends of each cable to your display devices. The way you connect these should reflect how you want to number your display devices. By software default, numbering begins from the top left of your display wall and continues across each row and down. See Figure 3-7.

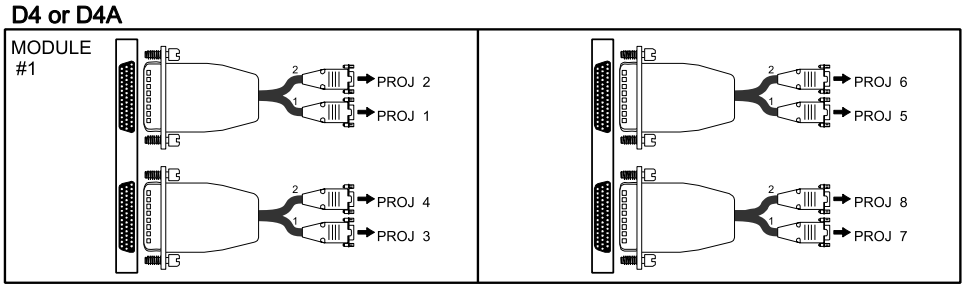


Figure 3-6 Connecting Displays

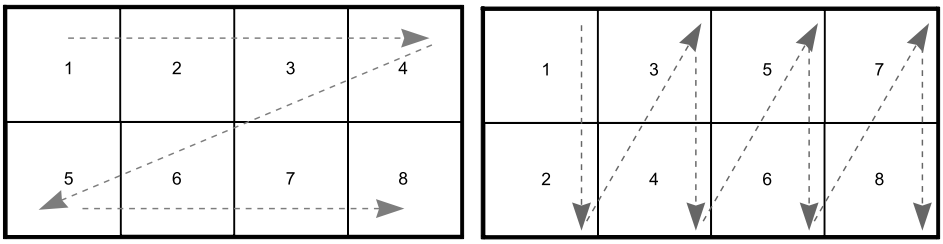


Figure 3-7 Standard (left) and Alternate (right) Display Numbering

NOTES: 1) *Changing the display numbering requires a re-installation of the TVC Display module drivers.* ***2)*** *It is possible to configure other custom layouts. For details contact Christie Technical Support at controllers@christiedigital.com.*

DVI-D Cables

When connecting DVI-D cables, the controller and display devices must be powered down. DVI-D connection requires EDID (Extended Display Identification Data) information which is detected at startup. Follow these steps:

1. Connect the single end of each of the two dual DVI-D cables to the display module connectors on the rear panel.
2. Connect the other two ends of each cable to your display devices. See the diagrams and explanation in the VGA Cables section above for more information about display numbering.
3. Power up the display devices.
4. Power up the controller.

No DVI signal

If you do not see output on any of the display devices, it is possible that there is a problem with the EDID information. For example, if the system detects different resolutions as reported by EDID information, it automatically switches to analog output.

1. Power down the controller.
2. Connect an analog multi-sync monitor to the Display 1 connector.
3. Power up the controller and confirm that the configuration is correct.

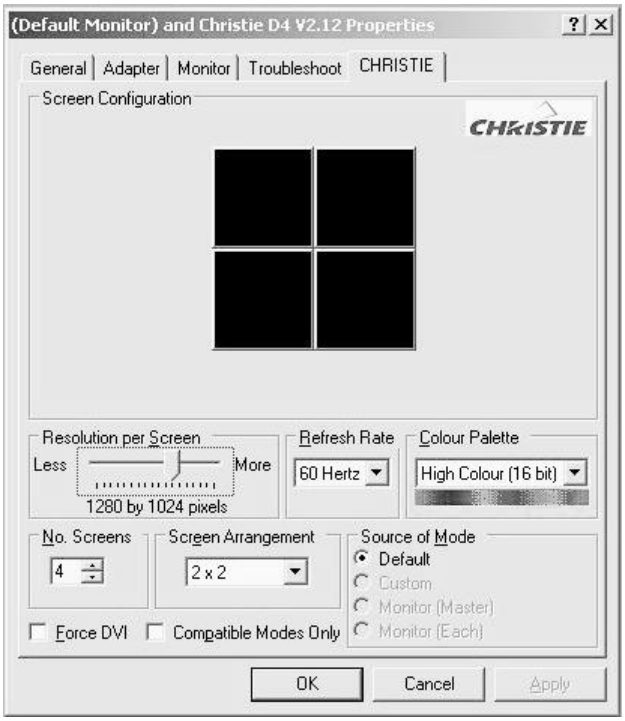


Figure 3-8 Christie Tab

NOTE: *The video overlay created when a MediaManager window is opened is maintained for some time after the MediaManager window is closed. Changing the resolution while this overlay is active can cause unpredictable behavior. Restart the system before changing the resolution.*

4. Check the ‘Force DVI’ checkbox.
5. Power down the controller.
6. Reconnect the DVI cable for Display 1.
7. Power up the display devices and the controller.

NOTE: *If you still do not see output on the DVI displays, contact Christie support.*

3.5 Connecting Devices for TVC-1100

Input and display modules can be installed in the TVC base chassis, the expansion chassis, or both.

About Source Connections

The controller comes preconfigured according to your specifications. You should be able to connect your sources and display content on the display wall when the unit is unpacked.

This section provides a high-level overview of the capabilities of the modules that are available for this controller. It also touches on some system configuration information.

All Input and Display Modules are clearly labeled.

IMPORTANT! If you are installing new component(s) into your existing controller, read the service sheet(s) that came with the new module(s) carefully before beginning. The information provided in this chapter is not sufficient to properly install and configure modules for the TVC-1100 series controller.

Composite or S-Video Sources

You can connect composite and S-video sources to V4 modules or V9 modules. VS16 modules do not support S-video input.

V4 module

Each controller comes standard with a V4 module for each *D4* module installed, which gives you the ability to display multiple composite or S-video sources. The controller can include up to a maximum of ten V4 modules.

A system with a single V4 module is capable of displaying up to four composite or two S-video sources anywhere on the display wall. You can also connect one S-video and two composite video sources to a single V4 module. Each input is numbered and can be selected from software. The image you display, and where it appears on the display wall, depends on the input selection you make.

IMPORTANT! The controller cannot support V4 modules if VS16 modules are already installed.

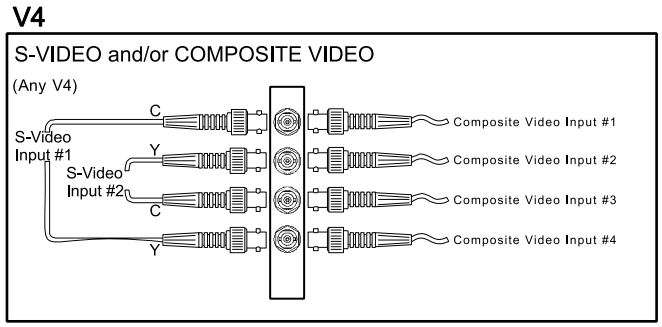


Figure 3-9 V4 Connections

VS16 Module

The 16-port VS16 module is an optional module that can be installed into your system to provide additional composite connections. A single VS16 module in a controller provides 16 composite video inputs. A maximum of two VS16 modules can be installed in one controller.

A 16 BNC cable is shipped with each module and is required for source connection. Connect the cable to the top D-sub connector on the VS16 module. The bottom connector is not needed and should remain empty.

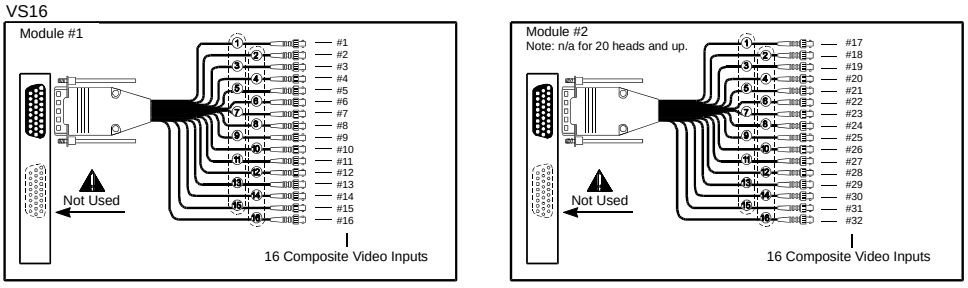


Figure 3-10 VS16 Connections

V9 Module

The V9 module (nine-input) is another optional module that can be installed into the controller to connect S-video, composite sources or both. A single V9 module has nine built-in decoders. Each decoder has two inputs, A and B, of which only one can be viewed at any given time.

A single V9 module can connect up to nine composite plus nine composite/S-video video signals and can display up to nine composite or S-video video overlays simultaneously on one or more displays in a display wall.

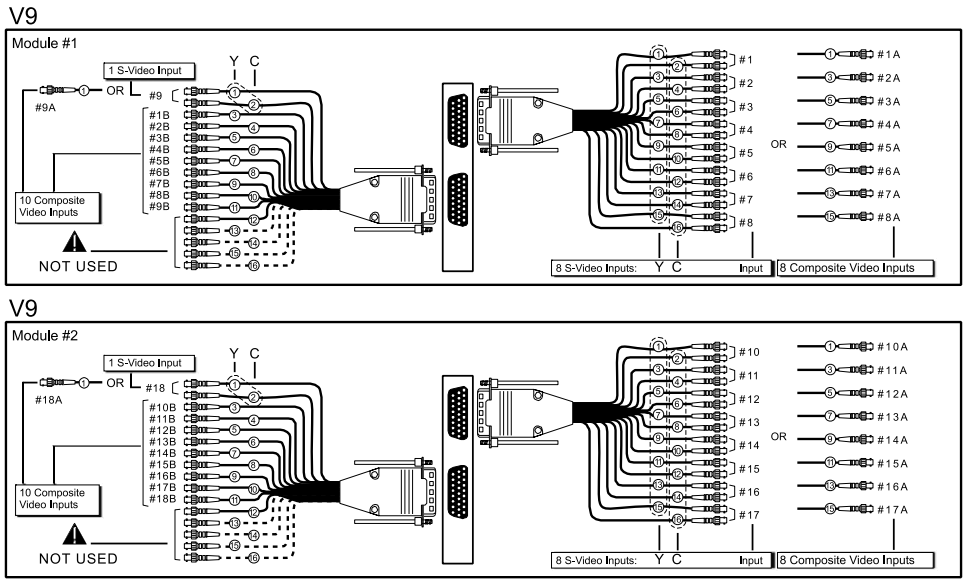


Figure 3-11 V9 Connections

NOTES: 1) *A total of 12 V9 modules can be installed in a controller. You can connect four V9 modules to a single D4 module.* ***2)*** *To view multiple videos on any given display, the video sources must be connected to a single V9 module. Only one V9 module can drive a display at any given time.*

R2 Module

The *R2* module is not part of the standard controller configuration. You can install up to a maximum of eight *R2* modules. For RGB channel configuration, refer to Figure 3-1 and Figure 3-2.

Each *R2* has two connectors. An RGB source connected to the top connector is considered Input 1.

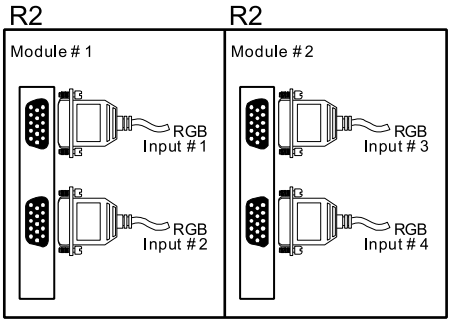


Figure 3-12 R2 Connections

Connecting Display Devices/Screens

The controller comes standard with one *D4* module and two dual VGA cables. In this configuration, the controller can be connected to up to four display devices. The controller can be customized to include up to 10 D4 modules (using a single expansion chassis), enabling you to choose from a variety of configurations. See Figure 3-7 Standard (left) and Alternate (right) Display Numbering.

Display devices not connected to the D4 module are detected by the system during the boot up process. One long beep and three short beeps are emitted if the display output is not connected to the first output on display module 1.

When connecting display devices to the controller, do the following:

1. Connect the single end of each of the two dual VGA cables to the D4 module connectors on the rear panel.
2. Connect the other two ends of each cable to your display devices. The way you connect these should reflect how you want to number your display devices. By software default, numbering begins from the top left of your display wall and continues across each row and down. See Figure 3-7.

Connect the keyboard and mouse.

1. Connect the keyboard and mouse to the PS/2 ports highlighted below.

Figure 3-13 PS/2 Ports

Connect Ethernet.

This step is only required if you are connecting to a network.

Connect the CAT5 cable to the RJ45 connector located on the rear input panel (Figure 3-14). Ensure that the CAT5 cable is connected to the port on the left. The port on the right is used by HP for diagnostic connections.

Figure 3-14 RJ-45 Connection

Connect Additional Peripheral Devices (if required)

Connect any peripheral devices such as USB, serial or parallel components to the appropriate connectors on the rear panel.

3.7 Connecting Power

Connect the approved rated line cords supplied with the controller to the AC sockets of the power supplies on the rear panel(s) and connect the three-pronged end of the line cords to a grounded AC outlet. The input voltage must be capable of 100-240 VAC, 15A.

Connect AC Line Cords to the TVC

The TVC base chassis can have up to two power supplies.

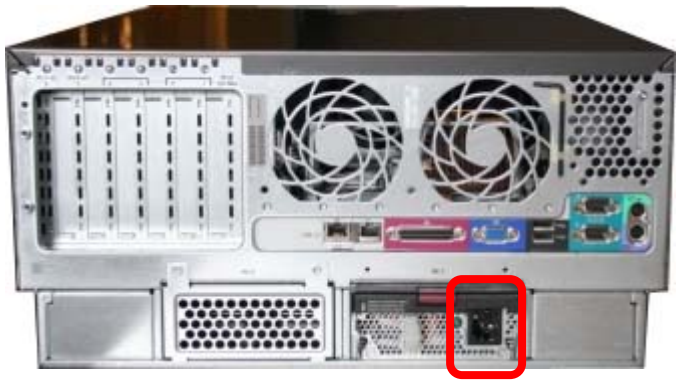


Figure 3-15 TVC Base Chassis AC Connection

NOTE: *The line cords provided with the controller are approved and rated for North American use only. Do not attempt to operate the controller if the AC supply and power cord are not within the specified voltages and power range.*

Connect AC Line Cords to the Expansion Chassis

The expansion chassis has four power supplies.

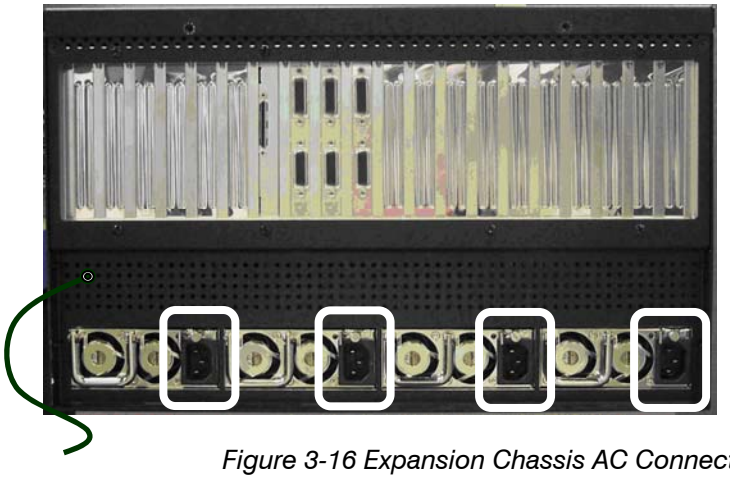


Figure 3-16 Expansion Chassis AC Connections

NOTES: 1) *The line cords provided with the controller are approved and rated for North American use only. Do not attempt to operate the controller if the AC supply and power cord are not within the specified voltages and power range.* ***2)*** *This equipment must be grounded to a reliable earth ground. The ground must be installed in accordance with local electrical safety standards.*

3.8 Powering ON/OFF

Power ON Expansion Chassis

***IMPORTANT**: If this is the very first time you are powering up the server, please refer to the start-up instruction sheet supplied with the controller for information about configuring the system, and activating the operating system.*

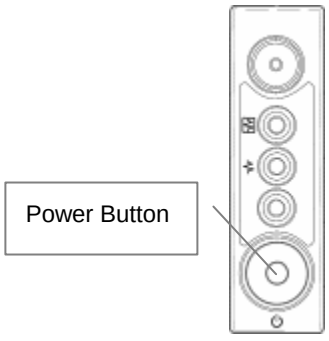
If you have an expansion chassis, it **must be powered up first** so that the controller can detect the input and display modules in the expansion chassis.

To power up the expansion chassis:

1. Open the door on the front of the expansion chassis.
2. Switch ON the power switch. If a power supply is not plugged in or has failed, an alarm will sound. To silence the alarm, press the Alarm Reset button located to the left of the power switch (Figure 3-17).
3. Close and secure the door with the butterfly lock.

Figure 3-17 Expansion Chassis Power Switch

Power ON Controller



To power up the controller and initialize the input and display modules,

1. Press the Power button on the front panel.
2. Wait until the Windows Server 2003 operating system cycles through its initialization process. This may take several minutes depending on the number of display cards installed.

   ***NOTE:** Depending on your display device capabilities you may or may not see the boot up process. The resolution of the boot sequence is 640 x 480.*

3. When the Windows Server login screen appears, login with a valid user ID.

Power OFF

To power off the controller,

1. Close all applications.
2. Shutdown Windows Server 2003 by clicking Start>Shut Down.
3. In the Shutdown dialog, select the appropriate reason for shutting down the system.

   Windows Server 2003 shuts down and the controller enters standby power mode, the system power LED changes to amber.

   WARNING! *The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed. If you are powering down for maintenance, you must also remove the power cord from each power supply to remove power from the server. Failure to remove the power cord may increase the risk of personal injury, electric shock, or damage to the equipment.*

   IMPORTANT! *If installing a hot-plug device, it is not necessary to power down the server.*

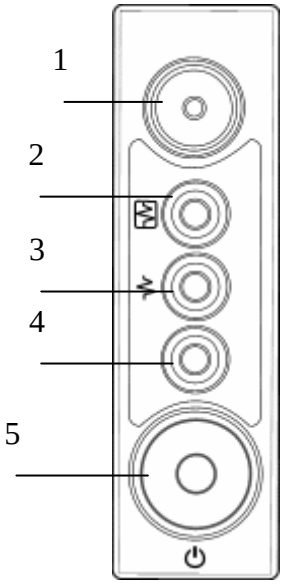
4. Set the power switch on the expansion chassis to the OFF position.

3.9 System Monitoring

The controller is equipped with a monitoring system. The LEDs on the front and back panels provide information about the controller's status.

Monitoring Controller Components

As the system cycles through the components, the LEDs on the front panel will illuminate to indicate status.

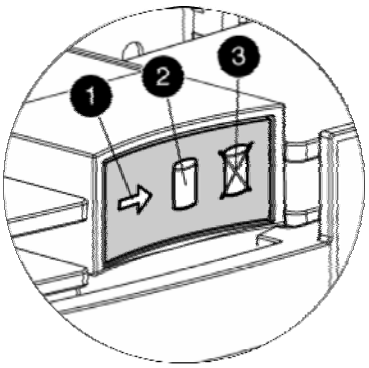


Item	Description	Status
1	UID switch and LED	Blue = Activated Flashing blue – System being managed remotely Off = Deactivated
2	Internal system health LED	Green = Normal (system on) Amber = System health is degraded Red = System health is critical Off = Normal (system off)
3	External system health (power supply) LED	Green = Normal (system on) Amber = Redundant power supply failure Red = Power supply failure, no operational power supplies Off = Normal (system off)
4.	NIC link/activity LED (embedded NIC only)	Green = Linked to network Flashing green = Linked with activity on the network Off = No network connection
5	Power on/Standby button and LED	Amber = System has AC power and is in standby mode Green = System has AC power and is turned ON Off = System has no AC power

NOTE: *You can also monitor the server remotely through WallManager's Administration>Status window.*

Monitoring Hard Disk Drives

Fault Status lights on the hard drive indicate the health of the drive. A flashing light indicates a failing drive.



Item	LED description	Status
1	Activity status	On = Drive activity Flashing = High activity on the drive or drive is being configured as part of an array Off = No drive activity
2	Online status	On = Drive is part of an array and is currently working Flashing = Drive is actively online Off = Drive is offline
3	Fault status	On = Drive failure Flashing = Fault-process activity Off = No fault-process activity

Section 4

Specifications

4.1 Hardware

Main Chassis

Physical

- Dimensions (HxWxD) .....8.69 x 19.0 x 25.75 in (22.07 x 48.26 x 65.43 cm)
- Max. Weight .....90 lbs.
- Cosmetic .....Customized "look and feel" chassis front to match expansion chassis

Drive Bays

- 6x hot plug Ultra320 SCSI drive bays
- 1x embedded 1.44MB floppy drive bay
- 2x media drive bays (one available)

Power

- Range Line Voltage .....90 to 264 VAC
- Rated Input Voltage .....100 to 240 VAC
- Rated Input Frequency.....47 to 63 Hz
- Rated Input Current .....10A (110 V) to 4.8A (220 V)
- Rated Input Power 1001W (100VAC)

Nominal Input Voltage (V_{rms})	100	115	208	220	230	240
Max Rated Output Wattage Rating	775	775	775	775	775	775
Nominal Input Current (A_{rms})	10.0	8.6	4.7	4.4	4.1	4.0
Max Rated Input Wattage Rating (Watts)	981	969	957	945	934	934
Max. Rated VA (Volt-Amp)	1001	989	976	964	963	953
Efficiency (%)	79	80	81	82	83	83
Power Factor	0.98	0.98	0.98	0.98	0.98	0.98
Leakage Current (mA)	0.43	0.50	0.65	0.96	1.00	1.04
Maximum Inrush Current (A_{peak})	30	30	30	30	30	30
Maximum Inrush Current duration (mS)	3	3	3	3	3	3

Cooling

- Standard .....3x hot plug chassis cooling fans
- Optional ..... Additional 3x hot plug, redundant chassis cooling fans (6x total)

Monitoring

- CPUs
- Memory
- Fans
- Power supplies
- Temperature
- Hard drives

Expansion Chassis

Physical

- Dimensions (WxHxD, not including faceplate or handles) .....482.6 x 265 x 487.3 mm
- Max. Weight .....70 lbs
- Cosmetic .....Black painted finish

Expansion Slots

- 32-bit/33MHz, PCI slots 13

Power

- Voltage range..... 100-120/200-240VAC ±10%
- Line frequency..... 47Hz – 63Hz
- Inrush current.....60/100A @ 115/230VAC (25°C)
- Current rating..... 20-10A max at any low/high input voltage
- Power consumption.....TBD
- Input connections .....Four AC inputs
- Power supply modules 4x 500W

Cooling

- 3x chassis cooling fans (86.5cfm each)

Monitoring

- Audible alarm for power degradation (failed or unplugged module)

Motherboard

Chipset

- Intel E7520 Chipset

Expansion Slots

- 64-bit/100MHz, PCI-X 3.3V slots ..... Four

  ***Note**: All PCI-X slots can only accept universal keyed PCI cards running at 3.3 volts.*

- PCI Express x4 slots ..... Two

  ***Note**: x8 cards are supported but will run at x4 speeds.*

Processor

- Standard .....Intel Xeon Processor 3.0 GHz/800MHz -2MB L2 cache
- Optional upgrades .....Intel Xeon Processor 3.8 GHz/800MHz -2MB L2 cache
- .....Dual-core Intel Xeon Processor 2.8 GHz/800MHz -2x2MB L2 cache
- Maximum processors .....Two (matching)

Main Memory

- Type .....Advanced PC2-PC3200R DDR2 SDRAM (400MHz)
- Standard capacity ..... 1 GB (2 x 512 MB)
- Optional upgrades ..... 2 GB (4 x 512MB)
- .....4 GB (4 x 1GB)
- Memory Protection .....Advanced ECC
- ..... Online spare capabilities

I/O Interfaces

- Parallel .....One
- Serial ..... Two
- Mouse .....One
- Keyboard .....One
- USB 2.0 ports .....Three (two rear, one front)

Storage

36.4GB hot plug hard drive

- Capacity .....36419.2 MB
- Height ..... 1.0 in (2.54 cm)
- Width ..... 4.0 in (10.16 cm)
- Interface ..... Ultra320 SCSI
- Transfer Rate Synchronous (Maximum) .....320 MB/s
- Seek Time (typical reads, including settling)
  - Single Track ..... 0.4 ms
  - Average ..... 3.8 ms
  - Full-Stroke ..... 8.0 ms
  - Rotational Speed ..... 15,000 rpm
- Physical Configuration
  - Bytes/Sector 512
  - Logical Blocks 71,132,000

72.8GB hot plug hard drive

- Capacity .....72837.2 MB
- Height ..... 1.0 in (2.54 cm)
- Width ..... 4.0 in (10.16 cm)
- Interface ..... Ultra320 SCSI
- Transfer Rate Synchronous (Maximum) .....320 MB/s
- Seek Time (typical reads, including settling)
  - Single Track ..... 0.4 ms
  - Average ..... 3.8 ms
  - Full-Stroke ..... 8.0 ms
  - Rotational Speed ..... 15,000 rpm
- Physical Configuration
  - Bytes/Sector 512
  - Logical Blocks 142,264,000

146.8GB hot plug hard drive

- Capacity ..... 146815.74 MB
- Height ..... 1.0 in (2.54 cm)
- Width ..... 4.0 in (10.16 cm)
- Interface ..... Ultra320 SCSI
- Transfer Rate Synchronous (Maximum) ..... 320 MB/s
- Seek Time (typical reads, including settling)
  - Single Track ..... 0.4 ms
  - Average ..... 3.8 ms
  - Full-Stroke ..... 8.0 ms
  - Rotational Speed ..... 15,000 rpm
- Physical Configuration
  - Bytes/Sector 512
  - Logical Blocks 286,749,488

300GB hot plug hard drive

- Capacity ..... 300000 MB
- Height ..... 1.0 in (2.54 cm)
- Width ..... 4.0 in (10.16 cm)
- Interface ..... Ultra320 SCSI
- Transfer Rate Synchronous (Maximum) ..... 320 MB/s
- Seek Time (typical reads, including settling)
  - Single Track ..... 0.55 ms
  - Average ..... 4.9 ms
  - Full-Stroke ..... 10.0 ms
  - Rotational Speed ..... 10,000 rpm
- Physical Configuration
  - Bytes/Sector 512
  - Logical Blocks 585,937,500

Standard Storage Controller

- Data Transfer Method .....64-bit PCI bus-master
- SCSI Channel Transfer Rate ..... 320 MB/s per channel
- Maximum Transfer Rate per PCI Bus (peak) ..... 400 MB/s per channel
- SCSI Protocol ..... Ultra320 SCSI
- Electrical Protocol .....Low Voltage Differential (LVD)
- SCSI Termination ..... Active Termination
- Internal SCSI Connectors .....Two 68-Pin Wide-Ultra SCSI-3 connectors

Optional RAID Controller Card

- Dimensions .....12.3 x 4.2 x 0.6 in (31.24 x 10.7 x 1.5 cm)
- Protocol ..... Ultra320 SCSI
- Architecture 64-bit
- SCSI Electrical Interface .....Low Voltage Differential (LVD)
- Drives Supported .....Up to six Ultra320 SCSI hard drives
- SCSI Port Connectors ..... One internal SCSI port
- Data Transfer Method .....64-Bit PCI bus-master
- PCI Bus Speed .....64-bit, 133-MHz PCI-X (1 GB/s maximum bandwidth)
- PCI ..... 3.3 volt PCI slot compatibility only
- Simultaneous Drive Transfer Channels ..... Two
- Channel Transfer Rate .....320 MB/s total; 320 MB/s per channel
- Software Upgradeable Firmware ..... Yes
- Cache Memory ..... 64 MB of DDR memory used for RAID and read cache
- Logical Drives Supported 32
- Maximum Capacity .....1.80 TB (6 x 300 GB)
- Memory Addressing ..... 64-bit, supporting servers with memory greater than 4 GB
- RAID Support .....RAID 5 (Distributed Data Guarding)
- .....RAID 1+0 (Striping and Mirroring)
- .....RAID 1 (Mirroring)
- .....RAID 0 (Stripping)
- Upgradeable Firmware ..... 2 MB Flashable ROM
- Disk Drive/Enclosure Protocol Support Ultra320

DVD Drive

- HP DVD±R/RW IDE Drive is compatible with industry-standard ISO 9660, MPC 3, and High Sierra logical formats.

Read compatible

- DVD-ROM
- DVD+RW and DVD-RW
- DVD+R dual layer
- CD-ROM Mode 1 data disc
- CD-ROM Mode 2 data disc
- CD-ROM XA
- CD-I
- Photo-CD multi-session
- CD audio disc
- Mixed mode CD-ROM disc (data and audio)
- CD Extra
- CD-R/CD-ROM
- CD-RW

Write compatible

- CD-R/CD-RW
- DVD+R, DVD+RW, DVD-R, DVD-RW
- DVD+R dual layer

Display/Video Architecture for TVC 1200

Graphics Output (D4A)

- Card Format ..... 32bit 66Mhz PCI adapter
- Card Size .....105 x 310mm
- Graphics memory ..... 16MB per output channel (64MB per card)
- Number of output channels ..... Four
- Max. analog output resolution per channel .....2048x1536 @60Hz
- Max. DVI output resolution per channel .....1600x1200 @60Hz (2048 x 1536 @35Hz)
- Max. video overlay windows ..... 16 per output channel (64 windows)
- Max. cards per system .....16 (64 display channels)
- Overlay frame buffer resolution .....1280 x 1024 x 4
- Digital advanced video input bus speed ..... 5 Gb/s
- Maximum digital video channels per bus 128
- Video window update rate .....Real time: 25/30 fps (PAL/NTSC)
- Standard output connector type .....HD15 (VGA)
- Optional output connector type ..... DVI-D
- Output level – signal 0.7V
- Output level – sync ..... TTL
- Offset .....0V typical
- Output impedance ..... 75 ohms
- Max. power consumption ..... 36.44 watts
- Max. power requirements .....+5V @ 2.8A, +3.3V @ 6.8A
- Supported display modes (all available in 16bpp and 32bpp):

Resolutions (Pixels x Lines)	Vertical Frequency (Hz)	DVI Support
640 x 480	60, 75, 85, 100	Yes
720 x 480	75	Yes
720 x 576	75	Yes
800 x 600	56, 60, 72, 75, 85, 100	Yes
848 x 480	60, 75	Yes
856 x 480	60	Yes
1024 x 512	60	Yes

Resolutions (Pixels x Lines)	Vertical Frequency (Hz)	DVI Support
1024 x 768	60, 70, 75, 85, 100, 130	Yes
1064 x 600	60	Yes
1152 x 864	60, 70, 75, 85, 100	Yes
1248 x 702	60	Yes
1280 x 720	60, 70	Yes
1280 x 768	56, 60, 70	Yes
1280 x 800	60	Yes
1280 x 960	60, 85	Yes
1280 x 1024	57, 60, 75, 85	Yes
1280 x 1024	100	No
1360 x 765	60	Yes
1360 x 768	60, 75	Yes
1400 x 1050	60, 75	Yes
1400 x 1050	85, 100	No
1600 x 1200	30, 36, 37, 42, 56, 59, 60	Yes
1600 x 1200	75, 85, 100	No
1704 x 960	60	Yes
1792 x 1344	60, 75	No
1856 x 1392	60	No
1888 x 1062	60	No
1920 x 1080	60	No
1920 x 1200	60	No
1920 x 1440	60, 75, 85	No
2048 x 1536	30, 35, 37	Yes
2048 x 1536	60, 75	No

Video Input (V16A)

- Card Format ..... 32bit 66Mhz PCI adapter
- Card Size .....105mm x 310mm Full size
- Number of capture channels 16
- Max. capture resolution per channel .....720 x 288
- Supported video formats ..... NTSC, PAL, SECAM in either Composite or S-video
- Video window update rate .....Real time: 25/30 fps (PAL/NTSC)
- Max. power consumption ..... 23.73 watts
- Max. power requirements .....+12V @ 1.4A, +3.3V @ 2.1A

Display/Video Architecture for TVC 1100

Graphics Output (D4 card)

- Card Format ..... 32bit 33Mhz PCI adapter
- Card Size ..... 105mm x 295mm
- Graphics memory ..... 32MB per output channel (128MB per card)
- Number of output channels ..... Four
- Max. analog output resolution per channel .....1600x1200 @ 75Hz (2048x1536 @ 35Hz)
- Max. DVI output resolution per channel .....1280x1024 @ 75Hz (2048x1536 @ 30Hz)
- Max. number of overlay windows ..... 9 per output channel (36 windows per card)
- Max. cards per system .....10 (40 display channels)
- Overlay frame buffer resolution .....720 x 576 x 4
- Video window update rate .....Real time: 25/30 fps (PAL/NTSC)
- Standard output connector type .....HD15 (VGA)
- Optional output connector type ..... DVI-D
- Output level – signal 0.7V
- Output level – sync ..... TTL
- Offset .....0V typical
- Output impedance .....75 ohms
- Max. power consumption ..... 14 watts
- Max. power requirements .....+12V @ 250mA, +5V @ 2.5A, +3.3V @ 2.5A
- Supported display modes:

Resolutions (Pixels x Lines)	Number of Colors	Vertical Frequency (Hz)
Standard Monitor Resolutions		
640 x 480	16.7 Million	60
848 x 480	16.7 Million	60
852 x 480	16.7 Million	60
856 x 480	16.7 Million	60
800 x 600	16.7 Million	56, 60, 72, 75, 85
1024 x 768	256 / 65,536 / 16.7 Million	60, 72, 75, 85
1152 x 864	256 / 65,536 / 16.7 Million	60, 72, 75, 85
1280 x 768	16.7 Million	56, 70
Resolutions (Pixels x Lines)	**Number of Colors**	**Vertical Frequency (Hz)**
1280 x 1024	256 / 65,536	60, 75, 85
1280 x 1024	16.7 Million	60, 75
1360 x 765	16.7 Million	60
1400 x 1050	65,536	60
1600 x 1200	256	60,75,85
1600 x 1200	65,536	60,75
Plasma Modes		
Fujitsu 40”		
852 x 480	16.7 Million	60
Pioneer 50”		
1280 x 768	16.7 Million	56, 70
NEC 42”		
848 x 480	16.7 Million	60
856 x 480	16.7 Million	60

NEC 50”		
1360 x 765	16.7 Million	60
NEODIGM PK8401		
1706x960	65,536	60
Other		
2048 x 1536	65,536	30, 35, 38

Video Input

4-port video input module (V4)

- Card Format .....Floating adapter
- Number of capture channels ..... F Composite (two S-video)
- Max. cards per system .....10 (one per display card)
- Max. capture resolution per channel .....720 x 288
- Supported video formats .....NTSC, PAL, SECAM (Composite)
- Video window update rate .....Real time: 25/30 fps (PAL/NTSC)
- Max. connected D4 graphics output modules 10
- Simultaneous video windows per D4 graphics output.....One

16-port video switch module (VS16)

- Card Format ..... 32bit 33Mhz PCI adapter
- Card Size ..... 100mm x 240mm
- Number of capture channels 16
- Switch size .....16 x 16
- Switching time 50ns
- Max. cards per system .....Two (16x32 switch or 32x16 switch)
- Max. capture resolution per channel .....720 x 288
- Supported video formats .....NTSC, PAL, SECAM (Composite)
- Video window update rate .....Real time: 25/30 fps (PAL/NTSC)
- Max. connected D4 graphics output modules .....Four
- Simultaneous video windows per D4 graphics output.....One
- Max. power consumption ..... 1.5 watts

9-port multiple video input module (V9)

- Card Type ..... 32bit 33Mhz PCI adapter
- Card Size ..... 100mm x 260mm
- Number of capture channels ..... 18 Composite or
- .....nine Composite and nine S-video
- Video decoders per module .....Nine
- Video buffers per module .....Four
- Max capture resolution per channel .....768 x 288
- Supported video formats .....PAL, NTSC, SECAM, S-video
- Max. connected D4 graphics output modules .....Four
- Simultaneous video windows per D4 graphics output.....Nine
- Max. power consumption ..... 12 watts
- Max. power requirements .....+12V @ 100mA, +5V @ 2.2A

Composite and S-Video Input Compatibility

Signal formats:	Composite-video (CVBS), S-video (Y/C)
Video standards	NTSC M, NTSC J, NTSC N, NTSC 4.43 50/60, PAL I, PAL B, PAL D, PAL G, PAL H, PAL M, PAL N, PAL NC, PAL4.43 60, SECAM B, SECAM D, SECAM G, SECAM K, SECAM L, SECAM L, SECAM LD
Input levels Composite-video: S-video luma (Y): S-video chroma (C):	1.0 Vp-p ± 3dB (including sync tip)[1] 1.0 Vp-p ± 3dB (including sync tip)[1] 630 mVp-p nominal (burst)
Connector type	BNC
DC offset	± 2V
Nominal impedance	75 ohms
V16A Bandwidth	60 MHz(-3dB)
VS16 Bandwidth	60 MHz(-3dB)
V4/V9 Bandwidth	7 MHz (-3dB)
Crosstalk	-50dB Fin < 5MHz (V9), -80 dB @ 20kHz (VS16, V16A) -50 dB (V4)

RGB Input (R2)

- Card Format ..... 32bit 33Mhz PCI adapter
- Card Size .....105 x 170mm (Half size)
- Video capture memory ..... 6 MB per channel (12MB per card)
- Number of input channels ..... Two
- Max. cards per system .....Eight (16 capture channels)
- Max. capture resolution per channel .....1600 x 1200
- Input connector type .....HD15 (VGA)
- Max. power consumption ..... 9.4 watts
- Max. power requirements .....+12V @ 200mA , +5V @ 1.3A

Horizontal frequency range	15 – 120kHz
Vertical frequency range[1]	50 – 120Hz
Scan format	progressive
Dot (pixel) clock rate[2]	25 – 140 MHz (one frame), max 280 MHz (two frames)
Active pixels per scan line[2]	640 min, 1600 max.
Active lines per field/non-interlaced frame	400 min., 1200 max.
Sync types	Separate H and V Composite (bi-level) Sync-on-green (bi-level)
Polarity[3]	Positive or Negative
Input levels[3] R,G,B – with sync:	1.0Vp-p ±2 dB (0.79Vp-p – 1.26Vp-p)
R,G,B – without sync:	0.7Vp-p ±2 dB (0.56Vp-p – 0.88Vp-p)
DC offset[3]	± 2V
Nominal impedance[3]	75 ohms

NOTES:

1. This specifies frame rate for non-interlaced sources and field rate for interlaced sources. Signals will be displayed at a lower rate (i.e., frames will be dropped)

2. For UXGA (1600x1200) sources and other sources with pixel clock higher than 140MHz the signal will be acquired in two passes.

	Standard Input VGA Connectors				
Signal Description	***RED***	***GREEN***	***BLUE***	***Hor/Comp***	***Vert***
RGB with H & V Sync (5 wire)[1, 2, 3]	Red	Green	Blue	H-Sync	V-Sync
RGB with composite sync (4 wire)[1, 2, 3, 4, 5]	Red	Green	Blue	Comp sync	No signal
RGB with sync-on-green (3 wire) [4,5]	Red	Green	Blue	No signal	No signal

		w/ sync			

NOTES:

1. Sync signals can not be swapped between the Hor/Comp and Vert connectors.

2. Sync signal(s) can be negative or positive polarity.

3. Sync present on any of the RGB signals will be ignored when separate or composite sync is input.

4. Sync can be bi-level.

5. 'No signal' means no signal should be applied to the input.

Networking

Embedded PCI-X Gigabit NIC Server Adapter

- Network Interface 10/100/1000-T
- Compatibility .....IEEE 802.3 10Base-T
- .....IEEE 802.3ab 1000Base-T
- .....IEEE 802.3u 100Base-TX
- Data Transfer Method .....64-bit/133MHz PCI-X
- Connector RJ-45
- Network Transfer Rate

  10Base-T (Half-Duplex) .....10 Mb/s

  10Base-T (Full-Duplex) .....20 Mb/s

  100Base-TX (Half-Duplex) .....100 Mb/s

  100Base-TX (Full-Duplex) .....200 Mb/s

  1000BaseTX (Half and Full-Duplex) .....2000 Mb/s
- Cable Support

  10Base-T ..... Cat. 3, 4, 5 UTP; up to 328ft

  10/100/1000Base-TX ..... Cat. 5 UTP; up to 328ft

Optional Dual-port PCI-X Gigabit NIC Server Adapter

- Dimensions ..... 6.6 x 2.5 in (16.5 x 6.4 cm), 4.8 in (12.2 cm) width including bracket
- Communications processor ..... Intel 82546EB
- Compliance .....IEEE 802.3, 802.3u, 802.3x, 802.3ab, Dynamic 802.3ad, 802.1p, 802.1Q
- Transfer rate .....10/100/1000 Mbps, Half- and full-duplex
- On-board memory ..... 128 KB
- Data transfer method .....64-bit/133MHz PCI-X
- Interrupt levels .....INTA and B
- Bus architecture ..... PCI bus-mastering, compatible with existing PCI bus architecture
- Cable Connector 2x RJ-45
- Bus Connector .....Universal, keyed for 3.3 and 5 volt slots
- Transmit load balancing supported ..... Yes
- Switch-assisted load balancing supported ..... Yes
- Network fault tolerance supported ..... Yes
- Distance and Wiring Up to 328 feet/100 m with Category 5 (or better) twisted-pair cable
- Power requirement .....1600 mA @ 5V maximum; 1550 mA @ 5V typical

Optional Single-port PCI Express Gigabit NIC Server Adapter

- Dimensions .....4.5 x 3.0 in (11.43 cm x 7.62 cm)
- Communications Processor .....IEEE 802.3-2002, 802.3ab, Dynamic 802.3ad, 802.1QBroadcom 5721
- Compliance ..... IEEE 802.3-2002, 802.3ab, Dynamic 802.3ad, 802.1Q
- Transfer rate .....10/100/1000 Mbps
- On-board memory 40KB
- Data transfer method..... Single lane (x1), 100MHz PCI Express Reference Clock
- Interrupt levels ..... INTA
- Cable Connector RJ-45
- Distance and wiring ..... Up to 328 ft (100 m) with Category 5 or better UTP
- Power requirement .....1250mA @ 3.3V

Optional Dual-port PCI Express Gigabit NIC Server Adapters

- Dimensions ..... 18.9 cm x 11.1 cm (without bracket) (7.44 x 4.37 inches (L x W))
- Bus Width ..... Four lanes
- Bus Speed ..... 2.5 GHz
- Data Transfer Method ..... Bus Master DMA
- Standards Supported ..... IEEE 802.3ab, 802.3ad, 802.3u, 802.3x, 802.3, 802.1p, 802.1q
- Connector..... 2x RJ-45
- 10BASE-T ..... Category 3, 4, or 5 UTP 100 Meters (328 feet)
- 100BASE-TX..... Category 5 UTP 100 Meters (328 feet)
- 1000BASE-TX..... Category 5 UTP 100 Meters (328 feet)
- Interrupts Supported ..... Automatically configured
- Power requirement ..... 1.05A @ 12V

Peripheral Devices

Keyboard

- Type 104-key
- Features..... Eight programmable keys
- Interface ..... Four-pin male USB
- Adapter ..... USB to PS/2
-

Mouse

- Type ..... Two-button optical with scroll wheel
- Features..... Scroll wheel functions as third button
- Interface ..... Four-pin male USB
- Adapter ..... USB to PS/2

4.2 Software

Operating System

Windows Server 2003 Standard Edition – English Version.

Application Software

MASTER*Suite* Display Wall Software.

4.3 Regulatory

Safety

- CAN/CSA-C22.2 No. 60950-00, UL 60950 3rd Ed., IEC 60950 3rd Ed.
- CE, CB Certificate

EMI

- FCC Code of Federal Regulations, Title 47, Part 15, Conducted and Radiated Emissions, Class A
- EN50081-1 / EN55022 (CISPR 22) European Norm, Information Technology Equipment, Conducted and Radiated, Class A

EMC

- CISPR 24:1997/EN55024: 1998
- EN50082-1 European Norm under which, currently mandatory are European Norms
- EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8,
- EN61000-4-11, EN61000-3-2, EN61000-3-3

Marking

- The product shall conform to all relevant European directives, standards, safety, health, and environmental concerns and bare the CE marking.
- China Compulsory Certification (CCC)

4.4 Reliability and Serviceability

Reliability

Serviceability

- MTBF of major components.....>50,000 hours
- MTTR ..... 15 minutes max.

4.5 Environmental

Operating

- Temperature .....10°C to +35°C
- Humidity .....15% to 80% non-condensing
- Altitude .....0 to 3000m

Storage (Non-operating)

- Temperature .....-20°C to +40°C
- Humidity .....5% to 90% non-condensing

Shipping

- Thermal Shock ..... -20C to +40°C
- Thermal Drop .....-20°C for 8 hours then 30cm onto bottom
- Altitude .....15,000m max.
- Vibration ..... 10 Hz, 100Hz, 300Hz for 15 min/frequency.
- Impact / Handling Must survive a 30cm drop onto concrete when in standard packaging.

4.6 QUALITY

ISO 9001:2000 Manufactured in Christie's Canadian facility, which is ISO 9001:2000 certified

Section 5

Troubleshooting

5.1 Display

System is on, but nothing displays

If you have an expansion chassis, the expansion chassis must be powered up first, then the controller so that the controller can detect the input and display modules.

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